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ABSTRACT

This module on automotive transmissions is the fifth of six (CE 028 296-301) in the auto mechanics course of a bilingual skills training program. (A Vocabulary Development Workbook is available as CE 028 294.) The course is designed to furnish theoretical and laboratory experience. Module objectives are for students to develop trade-related Spanish/English vocabulary, to identify and explain the function of the three types of clutches, to explain how the manual transmission works, to identify and explain the function of the parts of an automatic transmission, and to explain parts and functions of the drive line, rear axles, and differentials. Contents include list of module objectives; pretest; five sections on (1) clutches, (2) manual transmissions, (3) automatic transmissions, (4) drive lines, and (5) rear axles and differentials; posttest; and English/Spanish vocabulary list. Each section is organized into this format: instructions, vocabulary, and concepts (statements or questions to direct reading) presented in English and Spanish; readings; and worksheets to evaluate comprehension of the trade-related reading material. Worksheets also cover these areas: vocabulary, definitions, word attack skills, spelling, writing skills, and application of terminology to the trade area. (YLB)

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I. PURPOSE

This module is to:

1. Assist students in developing trade-related vocabulary.

2. Facilitate the learning of the trade through reading information sheets, vocabulary lists and language exercises.

3. Provide student with individual check lists for individual progress.

II. INTRODUCTION

Auto Mechanics requires the student to follow a defined theoretical course of study as well as acquire practical knowledge in the respective trade. Due to the limited amount of time allowed for theory and the difficulty of the technical vocabulary found in the reading, the student often needs additional help in this area. Students in the Auto Mechanics trade are required to pass periodical tests and a final review before receiving a certificate allowing them to practice their trade. To succeed in passing this exam and to be better equipped for the job, the student must be able to function in the oral and written communication skills and utilize the technical vocabulary of their trade. This module is structured to provide for individual needs of the students so that they may progress at their pace in the academic or theoretical area. A simple coding system is utilized to facilitate student use.

III. ACTIVITIES

Because each module is geared for individualized instruction it is important to assess the individual needs of the students. A pre-test is administered to students before they begin working with a module. Instructions are given orally in Spanish and English.

Instructions, vocabulary and concepts in each module are written in Spanish and English so as to explain the purpose of each reading. There is a reading for each objective presented in the module. The reading is referred to as an information sheet. This sheet is designed to provide the student with reading material incorporating the technical vocabulary that is needed in the trade skill area. The gradation of reading is from simple to more complex. Thus the information sheet facilitates the learning process in the theoretical course of study. Each information sheet is followed by a series of diversified work sheets directly checking for comprehension of the reading material. Other items covered in these work sheets are: vocabulary, definitions, work attack skills, writing skills, spelling and application of terminology to the trade area.

Oral language development exercises directed by the instructor constantly reinforce the concepts presented. Students have an opportunity to utilize and develop the technical vocabulary needed in their trade by interaction among themselves, the instructor and tutors. The Bilingual dimension is specifically directed at concept and vocabulary development.

The students are directed to utilize supplementary materials available through the Learning Resource Center to reinforce each area as they progress in the module. Audio visuals are utilized to introduce subject matter. They are also accessible to the students to be used on an individual basis.

IV. EVALUATION

The students are evaluated by the instructors as to their progress in language and in the course content area through the pre-test, work sheets, check list and a post test. Individual student profiles and folders are kept on record to check on student progress at all times. Oral development skills are assessed individually.

Students go through the following process in utilizing the modules:

Pre-test (Students scoring 85% or below must complete the entire module. Those scoring above 85% may go on to the next module.)

Reading of instruction sheet
Information Sheet
Series of written and oral exercises
Oral evaluation
Post test (oral and written)
Recycling, if needed (Students scoring 85% or below on post-test are recycled through module in designated weak areas. See coding system.)

MODULE OUTLINE

5.0 Automotive Transmissions

5.1 Clutches

5.2 Manual Transmissions

5.3 Automatic Transmissions

5.4 Drive Lines

5.5 Rear Axles and Differentials

STUDENT OBJECTIVES

Upon completion of this module the students will be able to:

5.1 Identify and explain the function of the three types of clutches.

5.2 Explain how the manual transmission works in relation to gears, ratio, and torque.

5.3 Identify and explain the function of the parts of an automatic transmission.

5.4 Explain the parts and function of the drive line.

5.5 Explain the parts and functions of the rear axles and differentials.

PRE-TEST

1. Explain a manual transmission.

2. What is the function of a drive line?

3. What is the purpose of the clutch?

4. Name the three types of clutches.

5. Define the following:

   gears
   torque
   ratio

6. Describe a torque converter and its parts.

7. What are the basic parts of a torque converter?

8. Name the simple parts of a drive line.

9. What does a differential do?

10. Name the parts of a simple differential.

Instructions:

In the following information sheet you will read about automotive clutches. There is also a vocabulary list that will help you understand the information better.

Instrucciones:

En la siguiente página de información vas a leer del embrague de un automóvil. También hay una lista de vocabulario que te ayudará a entender la información mejor.

Vocabulary

Clutch - a mechanism that engages or disengages the engine from the transmission.
Embrague - un mecanismo que empeña o desempeña el engenio de la transmisión.

Hydraulic - pressure exerted through the use of a liquid.
Hidráulico - presión enpeñado por uso de un líquido.

Friction - resistance between two parts when in contact with each other.
Fricción - resistencia entre dos partes cuando están en contacto una con otra.

Diaphragm - a mechanism used in the clutch assembly.
Diafragma - un mecanismo usado en el embrague.

Remember the following questions as you read the information.
Recuerda las siguientes preguntas al leer la información.

1. What are the three types of clutches?
   ¿Cuáles son los tres tipos de embragues?

2. What is hydraulic?
   ¿Qué es hidráulico?

3. What is diaphragm?
   ¿Qué es diafragma?

Clutches

1. You have already read about automotive ignition, fuel and electrical systems. Most of the parts of these systems have to do with the engine of a car.

2. In the following readings you are going to learn about clutches and what part clutches play in the automobile.

3. The clutch is the assembly that is located between the engine and the transmission of an automobile. The purpose of the clutch is to engage or disengage the engine from the transmission to allow or not to allow power to flow from the engine to the transmission.

4. There are 3 common types of clutches. They are the coil spring clutches, diaphragm spring clutches and hydraulic clutches. The following is a short description of each type of clutch.

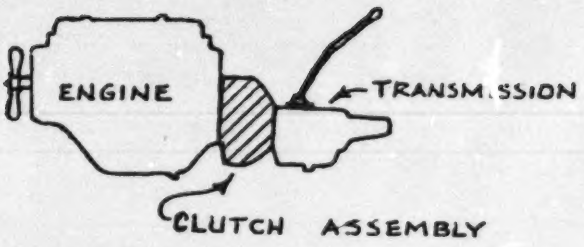
5. The coil spring clutch consists of a friction disk, a pressure plate and cover assembly, a throwout bearing and a clutch fork.

6. If you will remember in the module describing the electrical system, it was mentioned that the starting motor turns the flywheel of the automobile causing the engine to start. Well, the flywheel also plays an important part in the function of the clutch. The friction disk is located right behind the flywheel. When the clutch is engaged, it is the pressure from the coil springs against the friction disk and the flywheel that causes the flow of power from the engine through the clutch to the transmission.

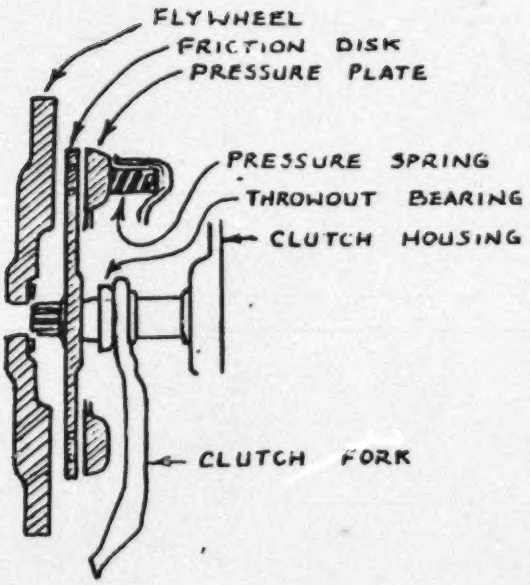
7. The diaphragm spring clutch works basically on the same principle except that instead of coil springs, a diaphragm spring is used to apply pressure to the friction disk and flywheel.

8. The hydraulic clutch uses hydraulic pressure instead of springs or a diaphragm.

9. In the next information sheet you will read about manual transmissions. Be sure to study the following diagram to get a better understanding of the clutch assembly.



LOCATION OF CLUTCH ASSEMBLY



CLUTCH ASSEMBLY DETAIL

Find The Answer

1. The clutch assembly of an automobile is located

   A. Between the transmission and the drive line.
   B. Between the engine and the drive line.
   C. Between the engine and the transmission.

2. The word in paragraph 1 which means "something to do with a car" is _____.

3. The words in paragraph 3 "engage or disengage" refers to _____.

4. There are _____types of clutches.

   A. Two
   B. Four
   C. Three
   D. One

5. The coil spring clutch consists only of a friction disk, a pressure plate and a cover assembly.

   Yes No Does not say

6. On the whole, this story is about;

   A. Transmissions
   B. How a car works
   C. Clutches

7. The clutch must engage or disengage the engine from the transmission in order to;

   A. Allow or not to allow power to flow to the transmission.
   B. Start the engine.
   C. Stop the engine.

Correct the spelling and punctuation on the following paragraph.

The clatch is the assembly that is located between the engine and the transmision of an automobil The purpose of the cluthe is too ingag or desengag the engine from the transmision to allow or not to allow power to flo from the engine to the transmision

Fill in the blanks.

__ra__sm__ss__on

__o__l

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p__es__u__e

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__y__ra__l__c

a__se__bl__

Answer the following:

1. Name the three types of clutches.

2. What is the purpose of the clutch assembly?

3. Where is the clutch assembly located?

4. Explain the coil spring clutch.

5. Explain the diaphragm spring clutch.

6. Explain the hydraulic clutch.

Instructions:

In the next information sheet you will read about manual transmissions. There is also a vocabulary list that will help you understand the information better.

Instrucciones:

En la siguiente página de información vas a leer de la transmisión manual. También hallarás una lista de vocabulario que te ayudará a entender la información mejor.

Vocabulary

Gears - transmits power by turning.
Engranaje - transmiten fuerza cuando dan vuelta.

Ratios - speed at which two gears turn.
Razón - velocidad en cual dan vuelta dos engranajes.

Torque - force.
Torsión - fuersa.

Transmission - gear box.
Transmisión - caja de cambios.

Remember the following questions as you read the information.
Recuerda las siguientes preguntas al leer la información.

1. What is torque?
   ¿Qué es torsión?

2. What is ratio?
   ¿Qué es razón?

3. What are gears?
   ¿Qué son engranajes?

4. What is a transmission?
   ¿Qué es una transmisión?

Manual Transmissions

1. In order to better understand transmissions, it is important to know something about gears, ratios and torque.

2. The simplest type of gears used in most transmissions are spur gears. They are like wheels with teeth all around them. These teeth mesh with each other so that when one gear turns the other gear turns also.

3. The sizes of the two gears determines the speed at which each gear turns. The different speeds at which the different size gears turn is called ratio. As an example take a gear that has 10 teeth and one that has 20 teeth. When these two gears are meshed together and are turned, the gear with 10 teeth will turn two times and the gear with 20 teeth will turn one time. This is called a 2 to 1 ratio. The turning force of the gears is called torque.

4. In a later reading you will learn about the parts between the transmission and the rear wheels. But for the purpose of a clearer explanation of what the transmission does, the rear wheels of an automobile are mentioned here.

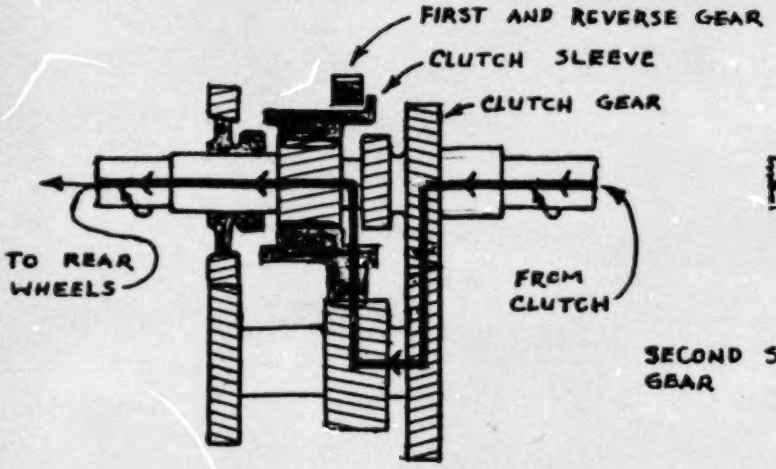
5. Manual transmissions are transmissions that are shifted by hand. Generally, manual transmissions have three (3) speeds forward, one (1) backward and, of course, neutral. There are transmissions that have four (4) or more forward speeds.

6. As the gear shift lever is moved to different positions such as first, second and third gear, the driver is actually selecting the gear ratio within the transmission.

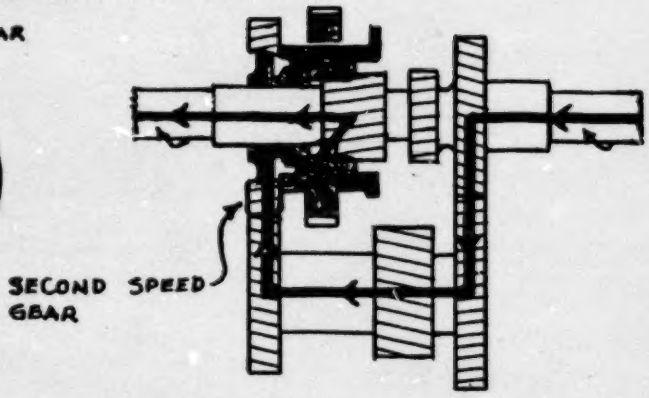
7. For example, when you start the car's engine, you depress or push down on the clutch pedal and shift the manual transmission gear shift lever into first gear. When the clutch is released and the clutch engages, the car begins to roll forward at which time the ratio of the engine to the wheels is about twelve to one. In other words the engine turns 12 times to the wheels one time. After you take off and the car is rolling and not needing so much power you push down on the clutch and shift to second gear. At this point the engine is turning about eight times to the wheels one time. Then you shift into third or high gear at which time the ratio is about four to one.

8. The following diagrams will give you a better idea of how power flows through a transmission in the different gears.

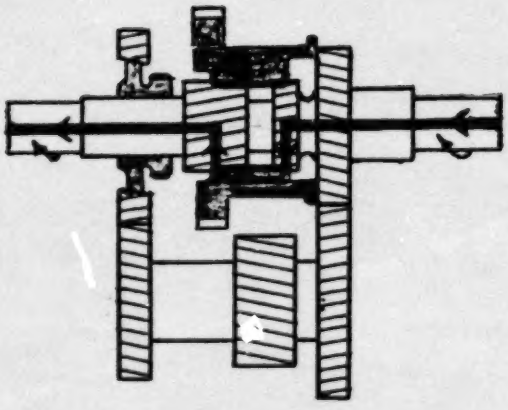
9. In the next reading you will study automatic transmissions which are very popular in later model automobiles.



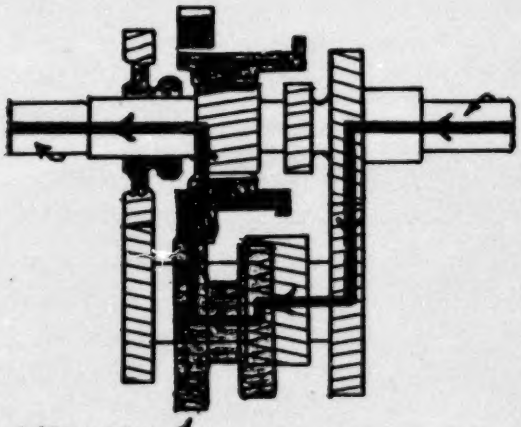
GEARS IN FIRST



GEARS IN SECOND



(DIRECT DRIVE)
GEARS IN THIRD



GEARS IN REVERSE

Find The Answers

1. The simplest type of transmission gears are

   A. ratio
   B. torque
   C. spur
   D. neutral

2. The word in paragraph 3 which means "decides" is _____.

3. The words " the simplest type" in paragraph 2 refer to _____.

4. The story does not say so, but it makes you think that

   A. Ratio is not important
   B. The speed is determined by the ratio.
   C. Torque is what determines the speed.

5. Manual transmissions do not need to be shifted.

   Yes No Does not say

6. On the whole, this story is about;

   A. Gears, ratios and torque.
   B. Gears, rations and torque.
   C. Automatic transmissions.

7. When the shift lever is moved you are actually

   A. Starting the engine.
   B. Selecting the gear ratio.
   C. Engaging the engine.

Match the following: 5.2

_____spur gears	1. used for selecting gear ratio within transmissions.
_____ratio	2. simplest type of gear used in most transmissions.
_____torque	3. speed at which different size gears turn.
_____shift lever	4. turning force of gears.

True or False

_____1. The turning force of the gears is called ratio.

_____2. The speed at which different size gears turn is called torque.

_____3. Generally, manual transmissions have only three forward speeds.

_____4. Spur gears are the simplest gears.

_____5. On manual transmissions the driver actually selects the gear ratio.

_____6. Gears are like wheels with teeth all around.

_____7. Most manual transmissions have three forward speeds, one backward and neutral.

_____8. Some manual transmissions have four or more forward speeds.

Instructions:

In the following information sheet you will read about automatic transmissions. Read the vocabulary list so you will understand the information better.

Instrucciones:

En la siguiente página de información vas a leer de la transmisión automática. Lee la lista de vocabulario para que entiendas la información mejor.

Vocabulary

Converter - changes from one to another.
Convertidor - cambia de uno a otro.

Turbine - hydraulic wheel.
Turbina - rueda hidráulica.

Planetary - a group of organized gears.
Planetario - un grupo de engranajes organizadas.

Remember the following questions as you read the information.
Recuerda las siguiente preguntas al leer la información.

1. What is a torque converter?
   ¿Qué es un convertidor de torsión?

2. How does the automatic transmission work?
   ¿Cómo trabaja la transmisión automatica?

3. Explain the parts of a torque converter.
   ¿Qué son las partes de un convertidor de torsión?

Automatic Transmissions

1. Automatic transmissions shift gears without any assistance from the driver. When the selector is positioned on "drive," and the engine is accelerated, the car will take off. At a certain speed it will shift into intermediate gear and then at a higher rate of speed, it will shift into high gear. All of this, automatically.

2. Automatic transmissions operate on the hydraulic principle, that is, with hydraulic oil pressure.

3. The two basic parts of an automatic transmission are the torque converter and the gear box. The torque converter functions somewhat like a clutch on a manual transmission; it passes the power from the engine to the gear box. The gear box is where the shifting action takes place.

4. Torque converters look like a hollow donut sliced in half round-wise. One half of the converter is attached to the flywheel and is called the driving member or pump or impeller. It turns at the same speed as the engine turns. The other half is called the driven member or turbine and it is attached to the transmission shaft.

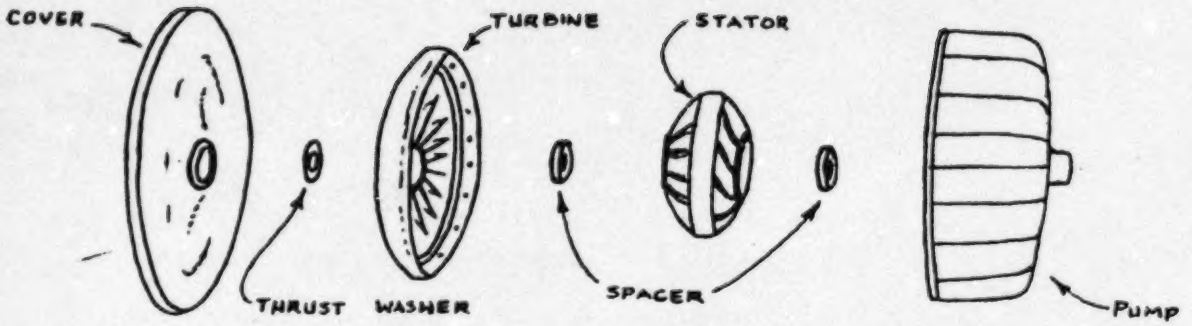
5. Both the pump and the turbine have vanes on the inside. These vanes throw the oil from the pump to the turbine causing the turbine to turn and make the transmission shaft turn.

6. Automatic transmissions have two or more gear combinations called planetary gears in the gear box. Later in this reading you will see a drawing of a planetary gear system.

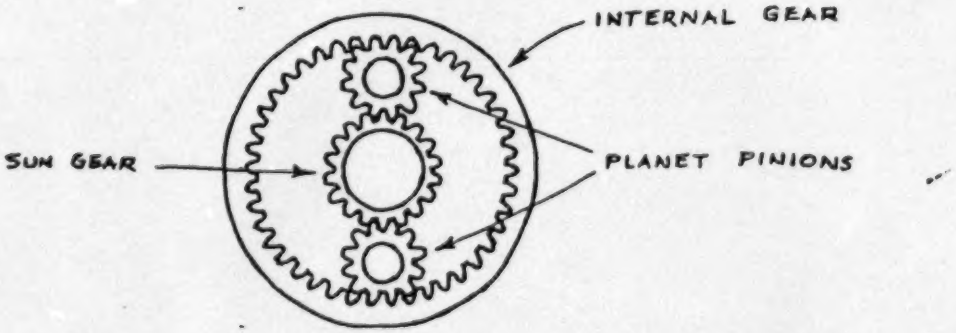
7. The shifting is controlled by a band and clutch gear assembly.

8. The following drawings show the basic parts of an automatic transmissions.

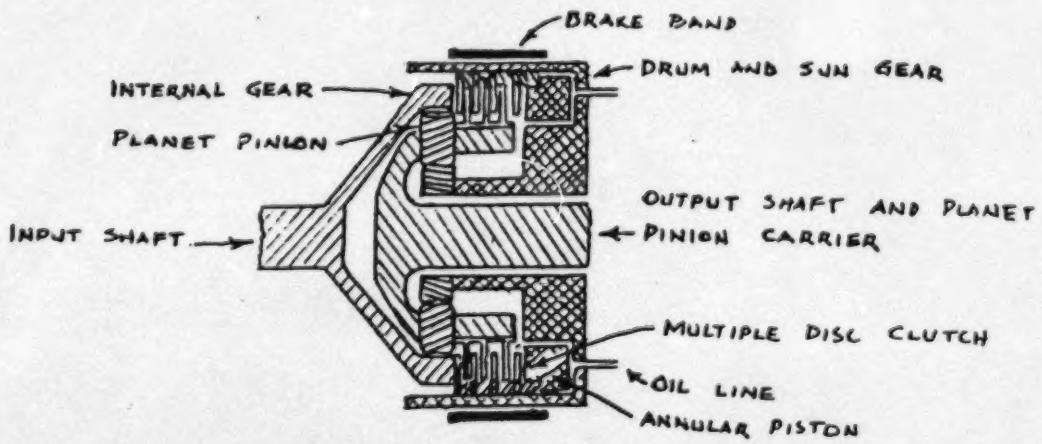
9. In the next reading you will study about drive lines.



PARTS OF TORQUE CONVERTER



FRONT VIEW OF SIMPLE PLANETARY GEAR ASSEMBLY



CTIONAL VIEW OF BRAKE DRUM, BRAKE BAND, PLANETARY GEAR AND MULTIPLE DISC CLUTCH

Find The Answers

1. There are _____basic parts to an automatic transmission.

   A. Four
   B. Six
   C. Three
   D. Two

2. The word in paragraph 2 which means "work" is _____.

3. The word "functions" in paragraph 2 refers to _____.

4. The story does not say so, but it makes you think that;

   A. Manual transmissions are better.
   B. Automatic transmissions work by themselves.
   C. There are five basic parts to an automatic transmission.

5. The shifting is controlled by a band and clutch gear assembly.

   Yes No Does not say

6. On the whole this story is about;

   A. Manual transmissions.
   B. Automatic transmissions
   C. Planetary gears

7. What causes the turbine to turn?

   A. Oil from the pump.
   B. Oil from the driven member.
   C. Oil from the torque converter.

Answer the following:

1. How do automatic transmissions operate?

2. What are the two basic parts of an automatic transmission?

3. Describe a torque converter.

4. What are planetary gears?

5. How is the shifting controlled?

Arrange the following words in alphabetical order.

planetary	_____
gears	_____
clutch	_____
band	_____
transmissions	_____
automatic	_____
turbine	_____
torque	_____
converter	_____
pump	_____
vanes	_____
impeller	_____
hydraulic	_____
shift	_____
shaft	_____
basic	_____
pressure	_____
drive	_____

Instructions:

The following information sheet is about drive lines. Read the information carefully. There is also a vocabulary list that will help you understand the information better.

Instrucciones:

La siguiente página de información es tocante el árbol de transmisión. Lee la información con cuidado. También hay una lista de vocabulario que te ayudará a entender la información mejor.

Vocabulary

Drive line - carry the power from the transmission of rear wheels.
Árbol de transmisión - lleva la fuerza del transmisión a las ruedas de atrás.

Universal joints - connects drive line to transmission and rear wheels.
Cardán - conectan la transmisión con las ruedas de atras.

Remember the following question as you read the information.
Recuerda las siguientes preguntas al leer la información.

1. What do drive lines do?
   ¿Qué es la función del árbol de transmisión?

2. What are the parts of a drive line?
   ¿De qué consiste el árbol de transmisión?

Drive Lines

1. Drive lines carry the power from the engine through the transmissions to the wheels of an automobile. The most common type of drive lines are the ones where the engine is in the front of the automobile and the rear wheels are driven. There are some automobiles that have the engine in the front and they have front driven wheels. There are also automobiles with the engine in the rear with rear driven wheels. In these two cases, the drive line is very short. However, in this reading you will be reading about the type of drive line where the engine is in the front and the rear wheels are driven.

2. The parts of a simple drive line are as follows:

   a. front universal and slip joint.
   b. drive shaft.
   c. rear univeral joint.

3. The front universal joint is the one that connects the transmissi shaft to the drive shaft. The purpose of this and other universal joints is that they allow driving power to be carried through two shafts that are at an angle to each other. In other words, the universal joint keeps the drive shaft from binding the transmission shaft and allows it to turn freely when the drive shaft moves up and down. The engine and transmission are more or less rigidly attached to the automobile frame. The rear wheels are attached to the frame by suspension springs which allows the wheels to more up and down on bumps or depressions on the road.

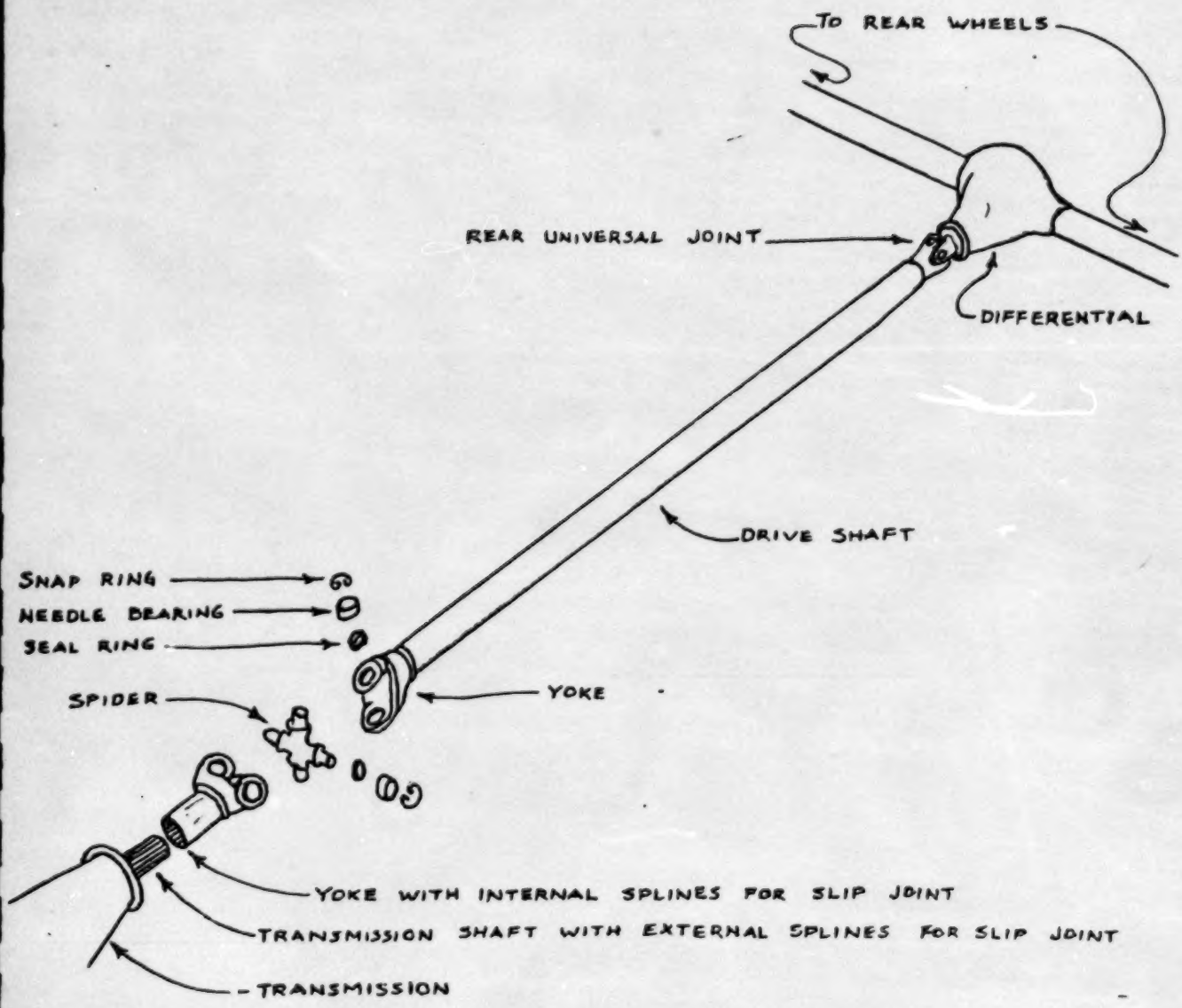
4. The slip joint allows changes in the drive-line length when the rear axles move toward or away from the car frame. The slip joint consists of external splines on the transmission shaft and internal splines on the front yoke of the front universal joint.

5. The one piece drive shaft consists of a hollow tube with a yoke on the front end for the front universal joint and one on the rear for the rear universal joint.

6. The rear universal joint is similar to the front universal joint except that it does not have a slip joint.

7. The following drawing shows the parts and location of a drive line.

The next reading will be about rear axles and differentials.


TO REAR WHEELS
REAR UNIVERSAL JOINT
DIFFERENTIAL
DRIVE SHAFT
SNAP RING
NEEDLE BEARING
SEAL RING
SPIDER
YOKE
YOKE WITH INTERNAL SPLINES FOR SLIP JOINT
TRANSMISSION SHAFT WITH EXTERNAL SPLINES FOR SLIP JOINT
TRANSMISSION

DRIVE LINE

Find The Answers

1. There are _____parts in a simple drive line.

   A. One
   B. Three
   C. Four
   D. Two

2. The word in paragraph 3 which means "brings together" is _____.

3. The words "allows changes" in paragraph 4 refer to _____ _____.

4. The story does not say so, but it makes you think that;

   A. The wheels could not turn without the drive line.
   B. Manual and automatic transmissions are the same.
   C. There are six different types of drive lines.

5. The rear univeral joint is the same as the front universal joint.

   Yes No Does not say

6. On the whole this story is about;

   A. Rear axles
   B. Transmissions
   C. Drive lines

7. The difference between a front universal joint and a rear universal joint is;

   A. Rear universal joint has an axle.
   B. Rear universal joint has a slip joint.
   C. Rear universal joint does not have a slip joint.

Answer the following:

1. Name the simple parts of a drive line.

2. What do drive lines do?

3. What does the front universal joint do?

4. Describe the one piece drive shaft.

5. What is the difference between a front and a rear universal joint?

6. What are the rear wheels attached to?

7. The engine and transmission are more or less rigidly attached to what?

Circle the correct word.

1. (There, Their) are three parts to a simple drive line.
2. The rear universal joint (is, are) similar to the front universal joint.
3. There (are, is) some cars with the engine in the rear.
4. In (this, these) two cases the drive line is short.
5. The (most, more) common type is rear driven wheels.
6. The difference between the front and rear universal joints (is, are) a slip joint.

Instructions:

In the following information sheet you will read about rear axles and differentials. Study the vocabulary list carefully so that you will understand the information.

Instrucciones:

En la siguiente página de información vas a leer de los ejes y el diferencial. Estudia la lista de vocabulario cuidadosamente para que entiendas la información.

Vocabulary

Differential - receives power from drive line.
Diferencial - recive fuerza por el árbol de transmisión.

Axle - turns the wheels.
Ejé - da vuelta a las ruedas.

Rmemeber the following questions as you read the information.
Recuerda las siguiente preguntas al leer la información.

1. What is the purpose of the differential?
   ¿Qué es el propósito del diferencial?

2. What are the parts of a differential?
   ¿De qué consiste un diferencial?

3. What happens to the wheels when a car is turning?
   ¿Qué le pasa a las ruedas cuando da vuelta un automóvil?

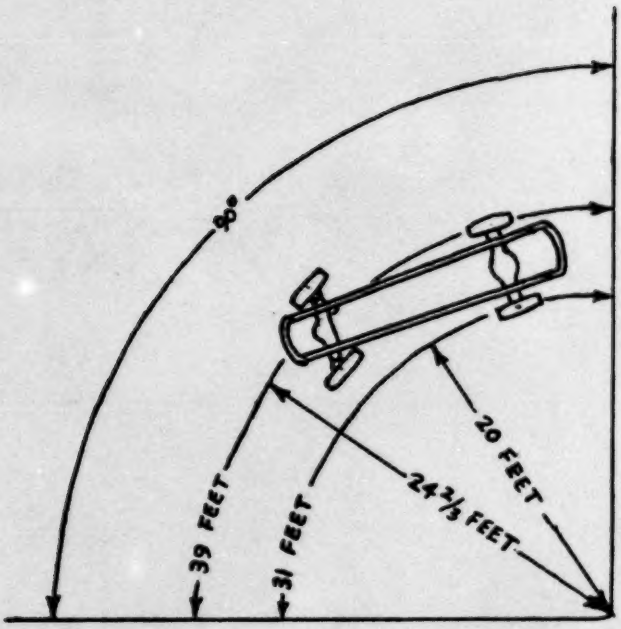
Rear Axles and Differentials

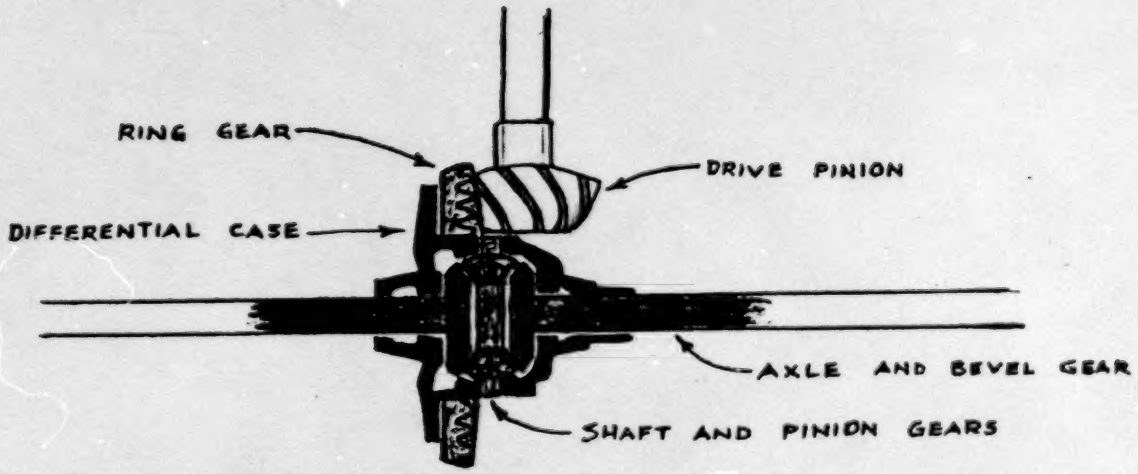
1. The <u>differential</u> is the unit that receives power from the drive line. It then splits the power and sends it through the rear axles to both rear wheels. When the automobile is going in a straight line, both wheels are turning at the same speed. But when the automobile makes a turn, the outer wheel travels more and faster than the inner wheel. This is the function of the differential.

2. The parts of a simple differential are as follows:

   (a) 2 axles with bevel gears on inside
   (b) 1 differential case
   (c) 1 drive pinion
   (d) 1 ring gear
   (e) 2 pinion gears
   (f) 1 shaft

3. In the following drawing you will see the effect of an automobile traveling with the inner wheel on a 20 foot radius making a 90 degree turn. You will also see all the parts of a simple differential put together to give you a better idea of how the differential and rear axles work.





A BASIC DIFFERENTIAL

Find The Answers

1. The differential receives power from

   A. Transmission
   B. Engine
   C. Drive line
   D. Head gears

2. The word in paragraph 1 that means "breakup" is _____.

3. The words "travels more and faster" in paragraph 1 refer to _____.

4. The story does not say so, but it makes you think that;

   A. The wheels turn evenly.
   B. The outer wheel turns more on a turn.
   C. Differentials are not very important.

5. The differential splits the power and sends it to the front wheels.

   Yes No Does not say

6. On the whole, theis story is about;

   A. The function of the ring gears.
   B. How the wheels turn.
   C. The parts and function of the differential.

7. Why must the differential split the power?

   A. To send it to both rear wheels.
   B. Not to overload the wheels.
   C. To keep the car balanced.

True or False

_____1. The differential receives power from the drive line.

_____2. The transmission splits the power and sends it to both rear wheels.

_____3. When the car makes a turn the inner wheel turns more and faster than the outer wheel.

_____4. When the car is going straight both wheels turn at the same speed.

_____5. There are six parts to a simple differential.

Fill in the blanks.

a__l__

di__fe__en__ial

__in__on

__e__r

s__a__t

b__v__l

__as__

Arrange the following words in alphabetical order.

1. shaft _____
2. pinion _____
3. gears _____
4. axle _____
5. bevel _____
6. differential _____
7. inside _____
8. effect _____
9. automobile _____
10. speed _____
11. drive _____
12. line _____
13. unit _____
14. power _____
15. function _____
16. wheel _____
17. rear _____
18. degree _____
19. radius _____
20. sends _____

POST-TEST

1. Name the three types of clutches.

2. What is the purpose of the clutch?

3. Define the following:
   gears
   torque
   ratio

4. Explain a manual transmission.

5. Describe a torque converter and its parts.

6. Name the simple parts of drive line.

7. What does a differential do?

8. Name the parts of a simple differential.

9. What is the function of drive line?

10. What are the basic parts of a torque converter?

Vocabulary	Vocabulario
accelerator	acelerador
angle	ángulo
assembly	ensamble
assistance	asistencia
automatic	automático
automobile	automóvil
axle	eje
backward	hacia atrás
band	banda
bevel	bisel
bind	ligar
cause	causa
clutch	embrague
clutch fork	horquilla del embrague
coil spring	resorte espiral
combination	combinación
consist	consiste
converter	convertidor
depress	deprimir
depression	compresión
determine	determinar
diaphragm spring	resorte de diafragma
differential	diferencial
description	descripción
disengage	desembragar
driven member	miembra propulsado

Vocabulary	Vocabulario
drive shaft	árbol de mando
driving member	miembro propulsor
engage	embrague
force	fuerza
friction	fricción
friction disc	disco de fricción
gear	engranaje
gear box	caja de engranajes
hollow	hueco
hydraulic	hidráulico
impeller	impulsor
inner	interno
intermediate	intermedio
lever	palanca
locate	localizado
manual	manual
mention	mencionado
mesh	engranar, encajar
neutral	neutral
operate	operar
outer	exterior
pedal	pedal
pinion	piñón
planetary	planetario
pressure	presión
pressure plate	placa de presión

Vocabulary	Vocabulario
principle	principal
pump	bomba
purpose	propósito
radius	radio
ratio	relación
rear	posterior
release	soltar
rigid	rígido
select	escoger
selector	selector
shaft	eje
shift	cambiar
slip joint	junta corrediza
speed	velocidad
spline	ranura
split	dividir
spur gear	piñon de engranaje recto
suspension	suspención
teeth	dientes
throw-out bearing	cojinete de embrague
torque	torción
transmission	transmissión
turbine	turbina
universal joint	unión universal
vane	paleta
wheel	rueda
yoke	horquilla